

No-adjustment Sync Separator + Sync Detector Monolithic IC MM1067

Outline

This IC is a no-adjustment sync separator + sync detector designed for use in VCR, TV and other video equipment.

Features

1. Sync separator with AFC (ceramic resonator means no adjustment required)
2. Composite and sync output pins
3. Sync detection circuit (used for blue-back switching or tuner automatic channel selection, etc.)
4. Power supply voltage $V_{CC}=5V$
5. Ceramic resonator can be selected for use in either PAL or NTSC

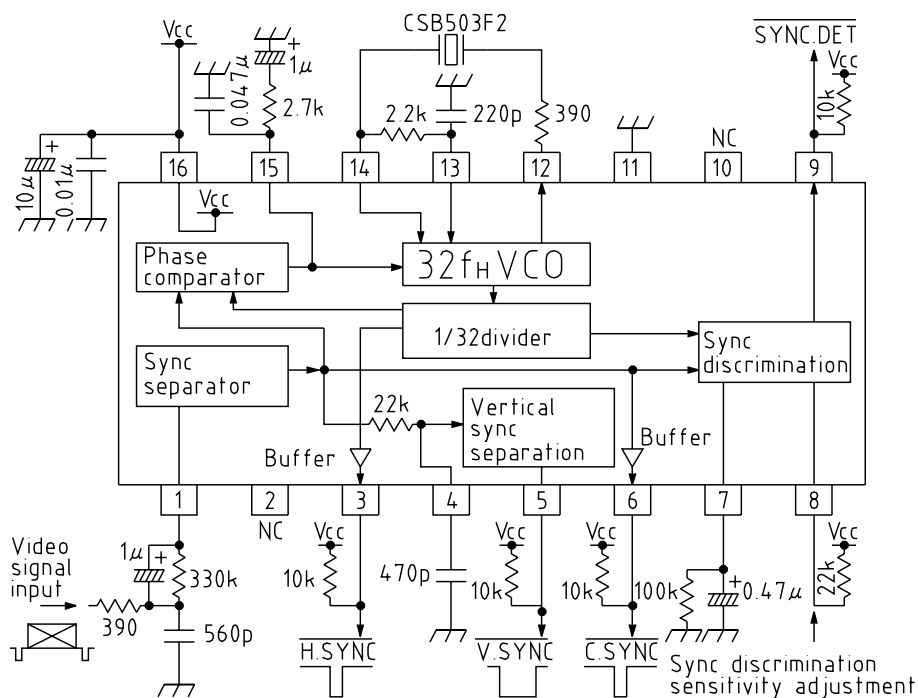
Package

- SOP-16A (MM1067XF)
- DIP-16A (MM1067XD)

Applications

1. TV
2. VCR
3. Other video equipment

Block Diagram



Pin Description

Pin no.	Pin name	Internal equivalent circuit diagram	Pin no.	Pin name	Internal equivalent circuit diagram
1	Video IN		8	GAIN	
			9	SYNC.DET	
2	NC		10	NC	
3	H.SYNC		11	GND	
			12	OSC-OUT	
4	V.INT		13	OSC-IN1	
5	V.SYNC		15	LPF	
6	C.SYNC				
			7	CR	

Absolute Maximum Ratings (Ta=25°C)

Item	Symbol	Ratings	Units
Storage temperature	T _{STG}	-40~+125	°C
Operating temperature	T _{OPR}	-20~+75	°C
Power supply voltage	V _{CC} max	7	V
Allowable loss	P _D	450 *1	mW

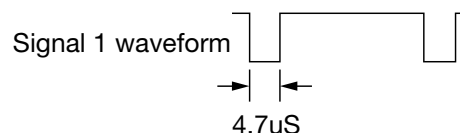
* Package : DIP-16A

Electrical Characteristics (Except where noted otherwise, Ta=25°C, V_{CC}=5.0V, X=CSB503F2, R=390 [OHM], C=3300pF, SW1=OFF)

Item	Symbol	Measurement circuit	Measurement conditions	Min.	Typ.	Max.	Units
Operating power supply voltage	V _{CC}	V _{CC}		4.7	5.0	5.3	V
Consumption current	I _d	I _d			9.0	13.0	mA
Free-running frequency NTSC	f _{o1}	TP1		15.534	15.734	15.934	kHz
Horizontal sync signal acquisition range NTSC	f _{CAP1}	TP1	V _{IN} : signal 1 *1 *2	300	500		Hz
Free-running frequency PAL	f _{o2}	TP1	X=CSB500F40, R=200OHM C=4700pF	15.425	15.625	15.825	kHz
Horizontal sync signal acquisition range PAL	f _{CAP2}	TP1	X=CSB500F40, R=200OHM, C=4700pF, V _{IN} : signal 1 *1 *3	300	500		Hz
H. sync pulse width	tw1	TP1	V _{IN} : signal 1, 15.734kHz *4	3.9	4.2	4.5	uS
H. sync delay time	td1	TP1	V _{IN} : signal 1, 15.734kHz *4	0.7	1.2	1.7	uS
H. sync output voltage L	V _{L1}	TP1	V _{IN} : signal 1, 15.734kHz *4		0.2	0.4	V
H. sync output voltage H	V _{H1}	TP1	V _{IN} : signal 1, 15.734kHz *4	4.8	5.0		V
LPF pin DC level	V _{LPF}	TP7	SW1 : ON	0.9	1.4	1.9	V
Sync separation level	V _{SEPA}	V _{IN}	V _{IN} : staircase wave 1V _{P-P} *5	20	50	80	mV
C. sync pulse width	tw2	TP4	V _{IN} : staircase wave 1V _{P-P} *6	4.0	4.5	5.0	uS
C. sync delay tim	td2	TP4	V _{IN} : staircase wave 1V _{P-P} *6	0.3	0.6	0.9	uS
C. sync output voltage L	V _{L2}	TP4	V _{IN} : staircase wave 1V _{P-P} *6		0.2	0.4	V
C. sync output voltage H	V _{H2}	TP4	V _{IN} : staircase wave 1V _{P-P} *6	4.8	5.0		V
V. sync pulse width	tw3	TP3	V _{IN} : staircase wave 1V _{P-P} *7	150	190	230	uS
V. sync delay time	td3	TP3	V _{IN} : staircase wave 1V _{P-P} *7	8.0	10.0	12.0	uS
V. sync output voltage L	V _{L3}	TP3	V _{IN} : staircase wave 1V _{P-P} *7		0.2	0.4	V
V. sync output voltage H	V _{H3}	TP3	V _{IN} : staircase wave 1V _{P-P} *7	4.8	5.0		V
V. sync switching voltage L	V _{THL3}	TP2	TP2 : DC voltage, 5V→Low *8	1.5	1.8	2.1	V
V. sync switching voltage H	V _{THH3}	TP2	TP2 : DC voltage, 0V→High *8	2.3	2.6	2.9	V
Sync discrimination output voltage L	V _{L4}	TP6	V _{IN} : staircase wave 1V _{P-P}		0.2	0.4	V
Sync discrimination output voltage H	V _{H4}	TP6	V _{IN} : no input signal	4.8	5.0		V
Sync discrimination switching voltage L	V _{THL4}	TP5	TP5 : DC voltage 5→Low *9	2.0	2.3	2.6	V
Sync discrimination switching voltage H	V _{THH4}	TP5	TP5 : DC voltage, 0V→High *9	2.7	3.0	3.3	V

Notes :

*1 Signal 1 : Rectangular waveform signal with 0.3V amplitude and pulse width 4.7uS



*2 Measuring horizontal sync signal pull-in range for NTSC

With TP1 waveform not synchronized to signal 1, adjust signal 1 frequency toward 15.734kHz. The measurement value is the smaller of the synchronized frequency and the difference from 15.734.

*3 Measuring horizontal sync signal pull-in range for PAL

With TP1 waveform not synchronized to signal 1, adjust signal 1 frequency toward 15.625kHz. The measurement value is the smaller of the synchronized frequency and the difference from 15.625.